

Female employment patterns around first childbirth in Austria

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working paper



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CHILDBIRTH IN AUSTRIA“**

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Abstract

This paper investigates the labor market behavior of women in Austria around their first childbirth. By analyzing Austrian FFS data of women who gave birth to their first child from 1960 to 1993 respectively 1996 and using logistic regression, the odds of interrupting employment and the odds of (re-)entering the labor market within three years are examined.

Family policy and especially parental leave mandates are supposed to highly influence women's employment behavior. Therefore, besides human capital and socio-demographic variables, the effect of parental leave eligibility and the potential leave duration are of special interest regarding the reentry decision. As will be shown below, mothers entitled to paid parental leave are more likely to interrupt employment, and the extension of leave duration over past decades has increased the odds of being employed three years after childbirth.

1 Introduction

Compared to male employment, female labor market participation is still less continuous, especially regarding the time around childbirth. When bearing a child, women frequently drop out of the labor force. In Austria, employment interruptions in connection with childbirth and childcare are particularly common due to the traditionally generous maternity and parental leave legislation.

However, in recent decades, female employment rates have risen exceptionally, while at the same time male employment rates stagnated or temporarily even decreased. The boost in female employment rates was particularly pronounced for women aged 20-35, i.e. female labor supply has experienced an outstanding increase during the childbearing years – a trend observable in most industrialized countries (Killingsworth & Heckman, 1986).

The increased labor market participation was accompanied by a decline of fertility to historically low levels, a fact which resulted in countless studies focusing on a link between these two contrary trends (e.g. Engelhardt & Prskawetz, 2002). However, the trade-off between female employment and fertility was observed to a lesser extent in Scandinavia, a reason why much research concentrates on the Nordic countries (e.g. Pylkkänen & Smith, 2003; Rønsen & Sundström, 1999; Rønsen, 1999).

The increased employment participation of young mothers has raised the topic of family friendly policies, which aim to enable a better combination of work and family life. As in many other Western countries, the parental leave duration in Austria has been prolonged to account for this fact, benefit rates have been raised and the number of beneficiaries has been extended drastically over time.

As Killingsworth & Heckman (1986) state, the labor supply behavior of females is important to understand, since it has implications for many other observed phenomena, including marriage, fertility, divorce, the distribution of family earnings and the gender wage gap.

In this working paper some aspects of young mothers' labor market behavior will be examined:

- At first, the likelihood that women (temporarily) withdraw from the labor market when bearing their first child will be estimated.
- Second, the probability of resuming market work within three years after childbirth will be analyzed.
- In a final step, the chance that those women who have not been employed immediately prior to childbirth are engaged in market work three years after first childbirth will be calculated.

The statistical method used to answer all three research question is logistic regression. Special attention is paid to the question to what extent the relatively generous parental leave mandates influence women's employment behavior around childbirth.

The child's third birthday is not taken as an arbitrarily point in time, but marks a central date, since in most Austrian federal states children are entitled to attend kindergarten from the age of three onwards. Hence, I suppose this date to be decisive for a mother's (re-)entry decision.

The paper is organized as follows: Section 2 aims to provide a survey of previous studies focusing on women's career breaks due to childbirth and the return to work decision of mothers. Section 3 presents a small theoretical model of labor supply. Section 4 describes the data and variables used in the analysis. Finally, section 5 provides the results of the logistic regression models and section 6 concludes.

2 Previous research

The impact of children, especially infants on female labor supply has been researched by numerous authors. Many researchers have also investigated the effect of maternity or parental leave on the lengths of career breaks due to childbirth. This section summarizes some of these studies and surveys some of their most important findings.

Waldfoegel et al. (1998) compare female labor market participation in the UK, US and Japan. By using labor force survey data, they find clear evidence for a negative effect of children on women's employment. The effect can be observed for all three countries, but it is largest for the UK and when the children are very young. In a second step, the authors estimate the effect of parental leave coverage on retention by using panel data. They find that, for all three countries, maternity leave coverage raises the probability of return to workplace within a year after childbirth, the effect being particularly pronounced for Japan.

Rønsen and Sundström (1999) consider the joint effect of parental leave and child care programs on female labor supply, by investigating the return to work decision of mothers in three Scandinavian countries. They observe both full- and part-time return rates for first-time and second-time mothers, independent from their preceding work histories. Their analyses reveal that in general mothers who are entitled to maternity leave return to work sooner than non-entitled mothers, both after first and second birth. However, as the entitlement period lengthens, mothers on leave return later and differences in entry risks between qualified and non-qualified mothers disappear. Unsurprisingly, in all three countries the risk of entry is higher after expiry of leave than during leave.

Rønsen (1999) investigates to what extent parental leave mandates encourage female labor

supply. She concludes, that generous parental leave programs enhance women's labor market participation during their childbearing years. Shorter leave entitlements hamper reconciliation of work and family, which forces many women to drop out of the labor force. However, if leave entitlements are too generous, this will prolong mother's career breaks, and as a consequence women's career opportunities - especially with regard to salary deteriorate.

Leibowitz et al. (1992) analyze the employment behavior of 1372 women who had a first birth between 1979 and 1986 and worked during pregnancy. They find evidence that women who worked longer into pregnancy are more likely to return sooner after delivery. According to their findings, higher wages are associated with increased labor supply prior to and immediately after childbirth.

Wenk & Garrett (1992) analyze female employment patterns by using NLSY data of women who were employed around the time of conception. According to their findings, having a spouse or another adult person present in the household enhances the probability of return and at the same time speeds up the return to the labor force, while the number of preschool children in the household has no effect. Mothers who contribute more to family income are likely to remain employed, to exit slower, to return quicker and to be employed one year after birth.

Pylkkänen & Smith (2003) find striking effects of economic factors regarding the timing of reentry. Whereas a lower compensation rate speeds up the return to market work, higher childcare prices postpone labor market entry. In simulations the authors find, that if fathers were given more leave, this would promote the labor supply of mothers in Sweden, but no such effect was found for Denmark.

In his comparative study Ruhm (1998) examines the economic consequences of parental leave mandates, by looking in what way changes in leave eligibility affect the gap between male and female employment. By using data of sixteen economies, he finds that due to parental leave legislation the female employment-to-population ratio raises by 3-4%.

Joesch (1994) investigates PSID data of the 80s and estimates how soon after giving birth women resume paid market work and determines factors being crucial for return. She finds that of the 60% of women who begin market work within one year, the majority started working at the beginning of the third months. Joesch therefor argues, that the career interruption is too short to justify lower wages and comparatively worse career prospects of mothers.

Using GSOEP data, Ondrich et al. (1998) estimate post-childbirth return to work hazards for mothers taking maternity leave in West Germany. For first time mothers they find significantly lower hazard rates in the mother-protection and post-protection periods. In the post protection period, the hazard rate increases with education and labor force experience.

For Austria, Nowak & Pfeifer (1998) investigate the duration until labor market entry of women after birth of their youngest child by using FFS data. When applying multivariate Cox-models they find the highest probability of labor market entry when the youngest child is aged between four and seven. The labor market entrance rate is highest for those women who are born more recently and those living in Vienna, whereas mother's employment does not exhibit any significant effect on retention.

3 Conceptual framework

Central aim of the paper is to find determinants of labor supply behavior around first childbirth. In the model presented here I assume that the fertility decisions have already been made in the past. According to economic labor market theory, each individual allocates his/her time available in such a way that his/her expected discounted life time utility is maximized (Killingsworth, 1983). In doing so, the individual is restricted not only by time, but also by his/her budget. In the simplest case the individual has only two alternatives how to allocate his/her time available: market work and leisure. In this model, leisure is not necessarily pure recreation, but incorporates also non-market work, e.g. housework and childcare.

The decision whether to exit and/or (re-)enter the labor market is made by comparison of the opportunity costs of staying at home and the opportunity costs of being engaged in market work. The opportunity costs of staying at home consist not only of the current market wage the woman could earn if she were employed, but also of the present value of her future income losses due to non-accumulation of human capital and depreciation of job-related human capital. This is referred to as full wage $w(t)$. The reservation wage $r(t)$ is the opportunity cost of working. It is defined as the market wage level at which a woman is exactly indifferent between working and not working. It reflects the utility of a woman's time at home, including the value of home production. However, the utility of not working in the market varies over time, hence the reservation wage is a function of the child's age. The presence of a newborn makes a mother's time at home more valuable, thereby increasing her reservation wage. However, as the child ages it needs less supervision but requires more market goods, and therefore the reservation wage declines. The availability of paid parental leave is supposed to increase the reservation wage, since the foregone market earnings are partly replaced by parental leave benefits.

A woman is assumed to exit/enter the labor market, when her opportunity costs of staying at home are lower than/exceed the opportunity costs of being employed. Put differently, according to the concept of opportunity costs a woman will be engaged in market work if her full wage exceeds her reservation wage, thus when $w(t) > r(t)$.

4 Data and Methods

This section briefly surveys the data base used for the analyzes below and describes the variables.

4.1 The Family and Fertility Survey

The Austrian 'Family and Fertility Survey' (FFS) constitutes the data base for the empirical analysis. The FFS was coordinated internationally by the Population Activities Unit (PAU) of the Economic Commission of Europe (UNECE) and was carried out in 23 countries¹. The

¹ Countries participating in the FFS: Austria, Belgium, Bulgaria, Canada, Czech Republic, Estonia, Finland, France, Germany, Hungary, Italy, Latvia, Lithuania, Netherlands, New Zealand, Norway, Poland, Portugal, Slovenia, Spain, Sweden, Switzerland and the USA. For further information on sample sizes, etc. see. Lutz (1997).

Austrian FFS was conducted from December 1995 until May 1996. It contains retrospective histories regarding education, partnership, residence, occupation and childbearing. About 180 questions were to be asked, the exact number depending on the age of the interviewed person (Lutz et al., 1997). Overall, 6120 individuals aged 20-54 have been asked, whereof 4,581 are females and 1,539 are males. The sample, which also includes non-Austrian citizens, is considered to be representative both on a national level and a federal level.

Of the 4,581 women in the FFS, 3,518 reported to have at least one child. However, for the purpose of this analysis only those cases, in which the first child was the woman's own physical child (i.e. not adopted, stepchild, etc.) and has not been a twin were considered. The sample is further restricted to women who gave birth to their first child after 1960 and who were resident in Austria at the time of childbirth².

4.2 Variables and research hypotheses

Table 1 below lists all variables used in the analysis and provides their exact definitions.

Table 1: Variable definitions

Variable name	Description
Interruption	Dummy whether a woman exits the labor market due to first childbirth, i.e. ends her employment within 5 months before actual childbirth or 3 months thereafter
Reentry	Dummy whether a woman who has interrupted employment due to childbirth has resumed employment within three years
Entry	Dummy whether a woman not employed before birth has entered the labor market within three years
Age	Age at first childbirth in months
Age2	Age at first childbirth in months squared
Birth cohort	Child's 10 years birth cohort, starting with 1960
Education	Mother's highest education completed at the time of birth ³
Job experience	months in employment prior to first childbirth
Job experience2	months in employment prior to first childbirth squared
Marital status	Marital status at the time of birth
Partner's education	Highest education of partner/spouse present at the time of birth
Eligible	Dummy whether the women was entitled for paid parental leave
Maximum legal leave	Maximum postbirth leave available by law
Other child	Dummy whether the woman got at least one other child within 3 years after first childbirth
Nationality	Mother's nationality at the time of the interview
Unemployment rate	Women's annual regional unemployment rate at the year of birth, only available from 1966 on

² This restriction is necessary in order to get plausible results regarding some variables used in the logistic regression which only apply to residents in Austria (e.g. eligibility, maximum postbirth leave, unemployment rate).

³ Although there is compulsory school attendance in Austria for at least 9 years, some individuals stated that they do not have any school leaving certificated. As their number is quite small, we counted them among those having compulsory school as their highest education.

The binary variable *interruption* indicates whether a woman interrupts her market work for at least one month because of the birth of her first child, i.e. in the last 5 months of pregnancy or 3 months after the birth date. Theoretically, all salaried employees who are entitled to draw parental leave benefits are obliged to take maternity leave and therefore to interrupt market work. But nevertheless, a considerable number of women did not report any career break surrounding first childbirth. This may be a question of interpretation, since in the opinion of those women withdrawal from reentry into the labor market because of childbirth may not be viewed as ending and restarting an employment.

For the purpose of this analysis, the spell of a career break is said to be ended, i.e. the dependent variables *reentry* and *entry* are coded 1, if the woman starts paid work within the period of observation, independent of the job duration. However, theoretically, women on parental leave cannot *reenter* the labor market, since individuals being on leave are counted among the labor force participants. Thus, although they are not at their workplace they still hold a job and are therefore in the labor market.

Since the FFS collected monthly data, I used the woman's age at first birth in months and her job experience, i.e. the months already spent in employment prior to birth, as covariates. As the influence of *age* and *job experience* on the variables of interest is not supposed to be linear, I include their squared terms as well. The accumulated job experience is supposed to be an indicator of a woman's preference for market work thereby reflecting her taste for work. Since the full wage increases with job experience, I expect the percentage of women reemployed within three years after childbirth to be higher the higher their previous work experience.

Further explanatory variables used are the child's birth cohort, a dummy controlling for mother's nationality at the time of the interview, her marital status at the time of birth as well as the mother's own educational attainment at first birth and that of her partner if present. The effect of *marital status* is not totally clear a priori: Living together with a working partner/spouse, a woman can - at least to some extent - rely on family income even if she herself is not engaged in market work. However, since having a partner facilitates access to additional informal childcare (e.g. the partner and his family members), being married may also have a positive effect on labor supply (Leibowitz et al., 1992).

The annual regional female unemployment rate is used as a covariate to incorporate the labor market situation and the demand for labor on the macro level. Generally, higher unemployment rates are associated with a lower market wage rate and consequently result in lower full wages. In times of high unemployment, finding a suitable job is more difficult. Because of these reasons, career breaks are expected to lengthen if unemployment surrounding first childbirth is high. Unfortunately, the gender-specific unemployment rate is only available from 1966 on.

For the reentry analysis, the variables *eligible* and *maximum legal leave* are of central importance. As discussed in many previous studies (Waldfoegel et al., 1998; Rønsen and Sundström, 1999; etc.), the effect of parental leave eligibility on the return to market work is ambiguous. On the one hand leave with employment protection is said to facilitate those women's return to the labor market, who would drop out of the labor market otherwise. But on the other hand parental leave benefits increase the mother's reservation wage and women are reluctant to engage in market work as long as they receive benefits. Hence, the

extension of leave duration is hypothesized to be connected with longer career interruptions. Thus, the impact of parental leave on female employment around first childbirth has to be estimated empirically. A survey of major changes in Austrian parental leave legislation is provided in the annex. In Austria, for the period under observation only salaried employees were entitled for parental leave if they contributed to the social security system via market work for the required time period. However, from the FFS data, it is not possible to determine whether a women has been a salaried employee, self-employed or farmer at the time of childbirth. Therefore, the *eligible* variable can only serve as an approximation of paid parental leave entitlement.

Since the father's right to take parental leave was only introduced in 1990 and since the number of fathers claiming that right was fairly negligible, I did not create a variable controlling for the father's leave take-up.

Unfortunately, the Austrian FFS does not contain any information regarding hourly or monthly wages. The only income-related information available is the net-household income at the time of the interview, which reflects an outcome of decisions made in the past. To include it in the analysis would therefore be misleading. Further, the FFS neither asked about the use of child care facilities or informal child care arrangements, nor about child care expenses. In addition, no information on working hours can be obtained for the job prior to/after first childbirth. Regrettably these important aspects cannot be considered in the analyses below.

4.3 Approach

In order to determine the employment behavior around childbirth, all women in the sample who have born their first biological child after 1960 were taken into account. The sample is further restricted to females who lived in Austria at the time of childbirth. Depending on the specific research question to be analyzed, the sample size varies accordingly.

The first question to be answered in this paper is whether a woman interrupts her job at all when giving birth to her first child. I defined interruption as due to childbirth if the mother ended her employment five months before birth up to three months thereafter. Thus, the analysis only includes women who were engaged in market work five months before childbirth. In a second step, I estimate the odds of being reemployed within three years after childbirth of those women who interrupted their job because of childbirth. To avoid censored observations, only births before the year 1993 are considered. At last, I separately estimate the probability of labor market participation of women who have not been employed five months before childbirth and thus had to be excluded from the interruption/reentry analysis. This group of women comprises those who started their first job after first childbirth and those women who got their first child within a spell of non-employment. Therefore, as for the other group, the likelihood of being engaged in market work within three years after childbirth will be analyzed.

The statistical method applied to answer those research questions is logistic regression. Basic features of logistic regression are explained in the annex.

Table 2 below summarizes the sample characteristics. Whereas the first two columns exhibit a rather similar structure, the third column deviates considerably. As can be seen easily when comparing the last column with the two other ones, women who have not been em-

ployed five months before childbirth are two and a half years younger and considerably less educated. Due to the composition of the sample, the job experience measured as months already employed prior to childbirth, is far less than for those individuals belonging to the first two sub-samples. As a consequence, those women are to a lesser extent eligible for parental leave benefits. Further, the proportion of singles is ten percentage points higher than in the other two subsamples and - as regards the child's birth cohort - their first birth dates back further in the past than that of women who interrupted their employment due to childbirth. In this subsample, the proportion of women with non-Austrian citizenship is much higher compared to the other subsamples.

Table 2: Descriptive statistics

	interruption	reentry	labor mar- ket entry
n	2499	1484	838
MEAN AGE	286,3	285,5	258,6
MEAN AGE SQUARED	84320,4	83645,6	69107,2
EDUCATION (%)			
compulsory	30,2	28,4	55,4
apprenticeship	29,8	31,6	22,3
vocational school/training	27,5	28,6	13,2
Matura	9,5	9,2	8,2
university	3,0	2,3	0,8
MEAN JOB EXPERIENCE	70,8	70,5	23,3
MEAN JOB EXPERIENCE SQUARED	7047,6	6806,7	2095,7
MARITAL STATUS (%)			
not married/cohabiting	17,3	15,1	24,0
cohabiting	19,3	18,8	17,8
married	63,3	66,1	58,2
ELIGIBLE (%)			
no	3,7	2,8	80,5
yes	96,3	97,2	19,5
BIRTH COHORT (%)			
1960-69	14,8	12,7	20,3
1970-79	26,7	25,9	31,0
1980-89	35,6	45,8	38,7
1990-99	22,9	15,6	10,0
NATIONALITY (%)			
other	2,4	1,2	6,3
Austrian	97,6	98,8	93,7
OTHER CHILD (%)			
no	59,5	54,1	58,0
yes	40,5	45,9	42,0
MEAN UNEMPLOYMENT RATE	4,6	4,4	4,4
PARTNER'S EDUCATION (%)			
compulsory	12,9	11,5	18,0
apprenticeship	54,3	56,6	55,9
vocational school	9,5	8,7	6,5
Matura	18,0	17,7	15,0
university	5,3	5,5	4,6
MAXIMUM LEGAL LEAVE (%)			
50 weeks	24,7	21,3	33,2
52 weeks	54,2	65,5	58,4
104 weeks	21,0	13,1	8,5

5 Results

5.1 Interruption of market work due to childbirth

As can be seen from Table 3, higher age at first birth is connected with slightly higher odds of interrupting employment. The table further illustrates, that a woman's education clearly influences whether she (temporarily) leaves the labor market due to childbirth or not. The odds of labor market withdrawal because of childbearing are significantly higher for lower educated women, relative to university graduates. However, months already spent in employment have not much influence on the chances of intermitting the current job. As expected, being single or cohabiting reduces the odds of labor market interruption by 34% resp. 26% compared to married mothers. Women entitled to take paid parental leave have 40% higher odds of interrupting market work, although statistical significance is lacking. The child's birth cohort variables signalize a continuing time trend: Having given birth to their first child more recently substantially increases the odds of employment discontinuation. Since leave entitlement has been extended over time, the variables *birth cohort* and *eligibility* may capture – at least to some extent - the same effect. Next, a dummy variable is included to control whether the woman is an Austrian citizen or not. As the exponentiated logit coefficient is quite high, this indicates that Austrian women are far more likely to interrupt their market work when giving birth to their first child.

The second model additionally controls for the labor market situation on the macro level by including the regional, annual female unemployment rate at the time of childbirth. From looking at the odds ratio in the second column in Table 3 below, it can be seen, that higher unemployment lowers the odds of exiting the labor market because of childbirth.

In the third model, the partner's education is included, which is assumed to control for the partner's labor market prospects not available in the FFS. Compared to the reference group of academics, having a lower educated partner lowers the odds of interrupting, the effect being quite pronounced for those whose partner graduated from compulsory or vocational school.

Table 3: Odds ratios of interrupting market work due to first childbirth

Variable	Model 1		Model 2		Model 3	
Intercept	0,007	(1,562)	0,024	(1,668)	0,016**	(0,012)
AGE	1,016	(0,010)	1,012	(0,011)	1,011	(0,012)
AGE2	1,000	(0,000)	1,000	(0,000)	1,000	(0,000)
EDUCATION (university)						
Compulsory	2,235**	(0,330)	2,190**	(0,332)	2,510**	(0,363)
Apprenticeship	2,741***	(0,315)	2,797***	(0,316)	3,407***	(0,345)
Vocational school	2,516***	(0,309)	2,478***	(0,310)	2,882***	(0,333)
Matura	1,825*	(0,309)	1,761*	(0,309)	2,255**	(0,329)
JOB EXPERIENCE	0,997	(0,004)	0,998	(0,004)	0,998	(0,005)
JOB EXPERIENCE2	1,000	(0,000)	1,000	(0,000)	1,000	(0,000)
MARITAL STATUS (married)						
No partner	0,658***	(0,123)	0,649***	(0,127)		
Cohabiting	0,740**	(0,120)	0,764**	(0,124)	0,752**	(0,122)
ELIGIBLE	1,404	(0,245)	1,142	(0,280)	1,490	(0,289)
BIRTH COHORT (1960-69)						
Cohort 1970-79	1,261*	(0,136)	1,053	(0,162)	1,269	(0,155)
Cohort 1980-89	3,080***	(0,141)	2,734***	(0,158)	2,956***	(0,161)
Cohort 1990+	3,813***	(0,162)	3,671***	(0,187)	3,438***	(0,182)
NATIONALITY	3,721***	(0,277)	3,779***	(0,277)	4,045***	(0,297)
UNEMPLOYMENT RATE			0,962	(0,030)		
PARTNER'S EDUCATION (university)						
Compulsory					0,581*	(0,281)
Apprenticeship					0,842	(0,255)
Vocational school					0,590*	(0,285)
Matura					0,806	(0,259)
n	2496		2373		2056	
Nagelkerke R ²	0,111		0,098		0,107	
χ^2 (df)	206,177 (15)		171,16 (16)		161,698 (18)	

standard error in parentheses

significance level: * ?< 0,1; ** ?< 0,05; *** ?< 0,01

5.2 Reentry into market work three years after childbirth

Having inspected the probability of exiting the labor market, the odds of having resumed employment within a certain period, e.g. three years, is of interest.

As before, age at first birth as well as accumulated job experience do not seem to influence the return to the labor market much. From

Table 4 one can identify that the mother's educational attainment affects her return to the labor market, although statistical significance is lacking. The odds of resuming employment within three years are 61% higher for those holding a Matura degree than for academics. As before, the marital status at the time of first childbirth crucially affects a woman's return: The odds ratios of both single and cohabiting women relative to married women are higher than one, indicating that married women are the one having the lowest odds of being employed

three years after first childbirth.

In the sample studied here, being eligible to take parental leave does not much affect the odds of ending the employment break due to first childbirth within three years. But not only the question whether a woman qualifies for leave is decisive for the timing of starting employment, but also the length of the benefit entitlement period may play an important role. Therefore, the variable *maximum legal leave* measures the utmost period for which it is statutory possible to draw parental leave benefits. Since the potential duration of statutory paid parental leave has increased steadily over the observation period, this variable also captures a time trend. For that reason, the *birth cohort* variable which controlled for the time trend in the previous regression is omitted and replaced by the *maximum legal leave* variable, which seems to be more suitable in this context. The odds ratios displayed in

Table 4 reveal that the extension of the entitlement period in 1990 considerably increased the odds of resuming market work relative to those who gave birth to their child in the 1960s, when the maximum leave available was only 50 weeks. As regards *nationality*, the odds of reentering the labor market before the child's third birthday are 18% lower for Austrian women than those of other nationality. The lack of statistical significance may be due to the relatively small sample size. Being of major importance for the timing of labor market reentry is the fact whether the women bears another child within the period under consideration. If this is the case, as indicated by the dichotomous *other child* variable, the odds of resuming employment are considerably lowered. Thus, as displayed in

Table 4, the odds of second time mothers as a ratio to first time mothers is very small.

As in the analysis before, the second model controls for the labor market situation on the macro level. While a higher unemployment rate decreased the odds of interrupting market work, it insignificantly increases the odds of reentry. Model 3 eventually controls for the father's education. The effect of partner's education on the odds of resuming market work are not significant.

Table 4: Odds ratios of resuming market work after first childbirth within 3 years

Variable	Model 1		Model 2		Model 3	
Intercept	0,654	(2,381)	0,350	(2,465)	0,843	(2,725)
AGE	1,004	(0,015)	1,007	(0,016)	1,005	(0,018)
AGE2	1,000	(0,000)	1,000	(0,000)	1,000	(0,000)
EDUCATION (university)						
Compulsory	1,210	(0,509)	1,149	(0,511)	1,043	(0,555)
Apprenticeship	1,075	(0,481)	1,078	(0,482)	1,059	(0,518)
Vocational school	1,312	(0,477)	1,319	(0,478)	1,115	(0,512)
Matura	1,605	(0,475)	1,668	(0,476)	1,550	(0,499)
JOB EXPERIENCE	1,001	(0,006)	0,999	(0,006)	1,005	(0,007)
JOB EXPERIENCE2	1,000	(0,000)	1,000	(0,000)	1,000	(0,000)
MARITAL STATUS (married)						
No partner	1,190	(0,167)	1,220	(0,171)		
Cohabiting	1,490***	(0,150)	1,449**	(0,153)	1,494***	(0,152)
ELIGIBLE	0,962	(0,374)	1,055	(0,395)	0,835	(0,455)
MAXIMUM LEGAL LEAVE (50 weeks)						
52 weeks	0,775*	(0,153)	0,782	(0,162)	0,802	(0,168)
104 weeks	2,786***	(0,209)	2,594***	(0,228)	2,659***	(0,229)
NATIONALITY	0,818	(0,532)	0,823	(0,533)	0,696	(0,552)
OTHER CHILD	0,324***	(0,123)	0,326***	(0,126)	0,326***	(0,134)
UNEMPLOYMENT RATE			1,039	(0,035)		
PARTNER'S EDUCATION (university)						
Compulsory					0,970	(0,370)
Apprenticeship					0,838	(0,327)
Vocational school					0,822	(0,376)
Matura					0,791	(0,331)
n	1480		1429		1250	
Nagelkerke R ²	0,143		0,146		0,141	
χ^2 (df)	162,924 (15)		160,672 (16)		134,919 (18)	

standard error in parentheses

significance level: * ?< 0,1; ** ?< 0,05; *** ?< 0,01

5.3 Labor market entry three years after first childbirth

In a last step, I separately consider women who have not been engaged in market work during pregnancy. This may be due to various reasons: either the mother has been never employed before childbirth or she may have given birth to her first child during a spell of non-employment.

While, again, age does not exhibit any strong effect on labor market entry, education clearly influences whether or not a women has entered the labor market three years after birth. The odds ratios are extraordinary low and indicate a positive relationship between education and the probability of labor market participation three years after childbirth.

Besides education, the mother's marital status also affects her return probability: The odds of

having resumed paid work within three years of single women are more than double that of married women, whereas the effect is insignificant for cohabiting women. This result is quite intuitive, since single mothers cannot rely on their partner's income while staying at home and caring for their child. Becoming pregnant and bearing at least one other child before the first child's third birthday lowers the odds of labor market entry relative to those who do not become mothers for a second time within three years by 69% in the first model.

As can be seen further from Table 5, Austrian women are more likely to reenter the labor market within the observation period but significance is lacking in model 1 and 3. In all three models, leave eligibility increases the odds of being engaged in market work three years after first childbirth. Longer duration of leave increases the likelihood of labor market participation at the first child's third birthday. When interpreting these effects one must be careful, since those who are entitled to leave have been employed previously for some time and therefore do have some labor force attachment.

Table 5: Odds ratios of entry into the labor market three years after first childbirth

Variable	Model 1		Model 2		Model 3	
Intercept	0,545	(2,861)	0,722	(2,965)	3,424	(4,129)
AGE	1,024	(0,021)	1,022	(0,022)	1,015	(0,031)
AGE2	1,000*	(0,000)	1,000*	(0,000)	1,000	(0,000)
EDUCATION (university)						
Compulsory	0,100**	(0,945)	0,094**	(0,934)	0,080**	(0,980)
Apprenticeship	0,100**	(0,946)	0,101**	(0,934)	0,089**	(0,979)
Vocational school	0,101**	(0,958)	0,110**	(0,947)	0,078**	(1,000)
Matura	0,232	(0,960)	0,219	(0,948)	0,215	(0,982)
Job experience	1,001	(0,007)	1,002	(0,007)	1,001	(0,009)
Job experience 2	1,000*	(0,000)	1,000*	(0,000)	1,000	(0,000)
MARITAL STATUS (married)						
No partner	2,279***	(0,199)	2,690***	(0,212)		
Cohabiting	1,107	(0,229)	1,161	(0,242)	1,193	(0,233)
ELIGIBLE	1,151	(0,267)	1,256	(0,279)	1,492	(0,305)
MAXIMUM LEGAL LEAVE (50 weeks)						
52 weeks	1,106	(0,189)	1,101	(0,214)	0,821	(0,228)
104 weeks	1,641	(0,325)	1,771	(0,363)	1,688	(0,382)
NATIONALITY	1,976	(0,415)	2,093*	(0,444)	1,610	(0,501)
OTHER CHILD	0,306***	(0,186)	0,334***	(0,195)	0,291***	(0,223)
UNEMPLOYMENT RATE			0,959	(0,051)		
PARTNER'S EDUCATION (university)						
Compulsory					0,948	(0,657)
Apprenticeship					1,060	(0,626)
Vocational school					0,854	(0,759)
Matura					0,697	(0,644)
n	829		753		632	
Nagelkerke R ²	0,205		0,218		0,180	
χ^2 (df)	128,667 (15)		124,758 (16)		79,905 (18)	

standard error in parentheses

significance level: * ?< 0,1; ** ?< 0,05; *** ?< 0,01

6 Discussion and outlook

The working paper at hand gives an idea of how various socio-economic and human capital variables influence the employment behavior of first-time mothers in Austria. By applying logistic regression, the likelihood of labor market exit during pregnancy up to three months thereafter and of labor market (re-)entry three years after first childbirth are investigated. Whereas age and accumulated job experience up to the birth of the first child do not exhibit any significant influence on the odds of interrupting respectively (re-)entering the labor market, marital status at first birth is of major importance regarding all three research questions. Besides its importance in most other socio-economic aspects ([Spielauer et al. 2003](#)), educational attainment is highly relevant for the probability of exiting/(re-)entering the labor market. As can be seen from the analyzes, family policy, i.e. parental leave and its duration, influences a mother's employment behavior around first childbirth. Postbirth leave has been prolonged in the past 40 years and longer leave increases the odds of being employed three years after birth. This result shows that career breaks due to childbirth have shortened recently. The introduction of childcare allowance in January 2002 and the expansion of beneficiaries as well as the increase in the monetary benefits are a good starting point for further research on the relationship between family policy and female employment.

Although the FFS provides detailed work and partnership histories, the scope of investigating female labor supply at childbirth is limited: Information on daycare usage, on pre- and post-birth working time arrangements and on wages and/or family income are missing, so that the explanatory power of the model is reduced. But nevertheless: keeping these limitations in mind, the work presented here provides interesting results regarding female labor supply around first childbirth.

The analysis conducted here is supposed to be a starting point of further in-depth investigation of young mothers' employment behavior. While in this paper I only ask whether a woman interrupts employment or not and whether she is employed (again) at her child's third birthday, future research is aimed at determining the exact time until resuming market work after childbirth by applying event history analysis techniques. Finally, the transition rates gained shall be implemented in the dynamic microsimulation model FAMSIM+ (Spielauer, 2002). So far, an education, partner matching and fertility module are implemented into the dynamic microsimulation model. Thus, in the virtual world of FAMSIM+, individuals are born, attend different types of schools according to pre-calculated transition rates, find partner, marry, bear children and eventually leave the model by dying. One of the next steps will be the development of a reliable labor supply module. The ultimate aim will be the exact reproduction of male and female employment patterns, which will enable the determination of duration of career breaks. This is particularly interesting with regard to calculating the time spent in employment necessary for pension benefit entitlement. Besides, knowing factors that prolong or shorten career breaks is essential for developing policies aimed at helping reconcile work and family life. In addition, an accurate prediction of female labor market behavior is necessary regarding the predicted shortage of workers in the future.

Annex1: The development of statutory parental leave in Austria

Table 6: Major changes in Austrian parental leave legislation

Date	Provision
1957	Introduction of an unpaid six-months parental leave, which could be taken after the termination of maternity leave and only applied to employed women ⁴ . The maternity leave period was at least 12 weeks ⁵ and during that time a maternity allowance amounting to lastly earned income was paid.
1961	Extension of the maximum parental leave duration up to ten months, i.e. until the child's first birthday. Introduction of a paid parental leave benefit depending on household income and family size: For lone mothers the benefit paid 100% of the unemployment benefit, married mothers received only up to 50% thereof. High income families were not entitled to parental leave allowance at all.
1974	Modification of the formerly income-oriented parental leave allowance into a flat rate benefit. Those in need (lone mothers, low-income couples) receive a 50% higher benefit rate. Additionally, the maternity leave period was extended from six to eight weeks pre- and postbirth.
1.1.1990	For the first time, fathers are entitled to take parental leave. The possibility of sharing leave between both parents was implemented.
1.7.1990	Extension of paid parental leave until the child's second birthday. The option of taking part-time leave between the child's first and third birthday was set up. Further, a part-time support ('Teilzeitbeihilfe') was introduced for those employed but not qualifying for benefits and for the self-employed.
1.7.1996	Reduction of the maximum parental leave duration to 16 months, unless the partner takes six months of the leave.
1.1.2002	Replacement of parental leave benefit by introduction of a child-care allowance: The potential leave duration is extended until the child's third birthday, which reduces to two and a half years (122 weeks) unless the partner doesn't take at least six months. Beneficiaries are no longer solely formerly employed persons, but all parents independent of their former work status (also students and self employed). The parental leave allowance amounts to € 14,53 daily.

⁴ The term "parental leave" is misleading, insofar, as until 1990 only mothers were entitled to take this leave, so the term "maternal leave" (not to mix up with "maternity leave"!) would be more appropriate.

⁵ 6 out of the 12 weeks have to be taken before delivery. In case of breastfeeding or a preterm delivery, the total maternity leave period is extended to 16 and 18 weeks respectively.

Annex2: Statistical Theory: Logistic Regression

Since the dependent variables of the interruption equation as well as the (re-)entry-equations are dummy variables, coded 0 for non-occurrence and 1 for occurrence. The mean of a dummy variable equals the proportion of cases having a value of 1 and therefor it can be interpreted as a probability. The application of ordinary linear regression is connected with multiple problems like nonlinearity, nonsense predictions, heteroscedasticity etc. Logistic regression is one method to overcome this problems associated with a binary dependent variable (Pampel, 2000; Menard, 2001).

The logit L_i is given by transforming the dichotomous dependent variable on the left-hand side of a standard ordinary linear regression as follows

$$L_i = \ln(p_i / (1 - p_i)) = b_0 + b_1 X_i \quad (1.1)$$

By exponentiating the expression given in (1.1), the odds O of experiencing an event are obtained:

$$O_i = p_i / (1 - p_i) = e^{b_0 + b_1 X_i} = e^{b_0} e^{b_1 X_i} \quad (1.2)$$

The odds of occurrence of an event is defined by the probability p_i of occurrence divided by one minus that probability $(1 - p_i)$ and is a function of the exponentiated constant times the exponentiated product of the coefficients b_i and the characteristics X_i .

The exponentiated coefficients can also be interpreted in terms of odds ratios as can be seen from formula (1.3). Odds ratios compare the odds of experiencing an event of two groups of individuals which only differ marginally in only one single aspect. For example, dividing the odds of someone aged 235 months at the time of first childbirth by the odds of someone aged 234 - all else being equal - yields the exponentiated logistic regression coefficient e^{b_1} . Thus, the coefficient shows the ratio of odds for a one-unit increase in the independent variable (Pampel, 2000).

$$\begin{aligned} \frac{p_1}{(1 - p_1)} &= e^{b_1 X_1} e^{b_2 X_2} e^{b_3 X_3} = \\ &= e^{b_1 * 1} e^{b_2 * 0} e^{b_3 * 0} = \\ &= e^{b_1} * 1 * 1 = e^{b_1} \end{aligned} \quad (1.3)$$

Since the distance of the exponentiated coefficient from one indicates the size of its effect, subtracting 1 from the exponentiated logit coefficient and multiplying that outcome by 100 gives the percentage increase/decrease in the odds due to a one-unit change in the independent variable. This way of interpreting logistic regression coefficients is rather intuitive and therefore mainly used in this paper.

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